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EXAMINER	
ZERVIGON, RUDY	
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NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/505,169	TAKAGI ET AL.	
	Examiner	Art Unit	
	Rudy Zervigon	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-27 and 29-35* is/are pending in the application.

4a) Of the above claim(s) *29-33* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,19-27,34 and 35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. This application contains claims 29-33 drawn to an invention nonelected with traverse in the reply filed on January 18, 2007. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 21-23, 25, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al (JP 06204143 A). Watanabe teaches a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) processing device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while providing a processing gas into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a processing chamber (7; All Figures, [0010]-[0011], Machine Translation) forming the processing space (7; All Figures, [0010]-[0011], Machine Translation) and capable of being pumped in vacuum; a susceptor (4; All Figures, [0010]-[0011], Machine Translation) for mounting the substrate (1; All Figures) in the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heater (3-1, 3-2; All Figures, [0010]-[0011],

Machine Translation) for heating the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation); a shower head (volume between top and bottom of 14; Figure 1) for providing the processing gas through a space (volume between top and bottom of 14; Figure 1) formed therein, the shower head (volume between top and bottom of 14; Figure 1) being installed at a ceiling (top of 7; Figure 1) of the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heat ray introducing passage (volume inside 6; Figure 1) vertically formed through the shower head (volume between top and bottom of 14; Figure 1) and separated from the space (volume between top and bottom of 14; Figure 1) formed inside the shower head (volume between top and bottom of 14; Figure 1); a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) facing through a measurement window (8; All Figures; [0010]; Machine Translation) at an upper opening part of the heat ray introducing passage (volume inside 6; Figure 1); and a gas introducing passage (16/17; Figure 1) connected to the heat ray introducing passage (volume inside 6; Figure 1) to introduce a gas thereinto, and separated from the space (volume between top and bottom of 14; Figure 1) formed inside the shower head (volume between top and bottom of 14; Figure 1), as claimed by claim 21. Applicant's claim requirement of "an inert gas" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In

re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

Watanabe further teaches:

i. the device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein the gas is discharged from a lower end opening of the heat ray introducing passage (volume inside 6; Figure 1) to be diffused while the gas is falling toward outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation); and the heat ray introducing passage (volume inside 6; Figure 1) is spaced apart from a center of the shower head (volume between top and bottom of 14; Figure 1) such that a position of a main gas stream of the gas discharged therefrom falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 22. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

ii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein a distance between a center of the shower head (volume between top and bottom of 14; Figure 1) and a center of the upper opening part of the heat ray introducing passage (volume inside 6; Figure 1) is set to range from 70% to 100% of a radius of the substrate (1; All Figures), as claimed by claim 23. Applicant's claim requirement of "is set to range from 70 to 100 of a radius of the substrate" is a claim requirement of intended use in the

pending apparatus claims depending on a non-apparatus part of the invention. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

iii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, further comprising a support member (2,12; [0010]; Machine Translation) having a ring shape, wherein the support member (2,12; [0010]; Machine Translation) has a low thermal conductivity ("cooled jacket"; [0011]; Machine Translation), blocks heat rays emitted from the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) and supports the susceptor (4; All Figures, [0010]-[0011], Machine Translation) by contacting a peripheral part thereof, as claimed by claim 25

iv. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein the processing gas is introduced to the inert gas introducing passage (volume inside 6; Figure 1), as claimed by claim 27

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1-5, 8-16, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Moslehi; Mehrdad M. (US 5846883 A). Watanabe teaches a shower head (volume between top and bottom of 14; Figure 1) structure for use in a device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while a processing gas being provided into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a shower head (volume between top and bottom of 14; Figure 1) including a plurality of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for providing the processing gas – claim 1

Watanabe further teaches:

i. The structure of claim 1, wherein a gas is discharged from a lower end opening of said one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) to be diffused while the gas is falling toward outside of a susceptor (4; All Figures, [0010]-[0011], Machine Translation) in the processing space (7; All Figures, [0010]-[0011], Machine Translation); and said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is spaced apart from a center of the shower head (volume between top and bottom of 14; Figure 1) such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper

surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 4. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

ii. The structure of claim 1, wherein an inert gas is introduced to said at least one of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which said at least one light introducing rod of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) is inserted, as claimed by claim 9. Applicant's claim requirement of "an inert gas is introduced" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

iii. a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) processing device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while a processing gas being provided into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All

Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a processing chamber (7; All Figures, [0010]-[0011], Machine Translation) forming the processing space (7; All Figures, [0010]-[0011], Machine Translation) and capable of being pumped in vacuum; a susceptor (4; All Figures, [0010]-[0011], Machine Translation) for mounting the substrate (1; All Figures) in the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) for heating the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation); a shower head (volume between top and bottom of 14; Figure 1) provided with a plurality of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for supplying the processing gas; and a temperature controller (not shown; [0014]; Machine Translation) for controlling the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) based on a detected value of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) – claim 10

iv. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising a support member (2,12; [0010]; Machine Translation) having a ring shape, wherein the support member (2,12; [0010]; Machine Translation) has a low thermal conductivity ("cooled jacket"; [0011]; Machine Translation), blocks heat rays emitted from the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) and supports the susceptor (4; All Figures, [0010]-[0011], Machine Translation) by contacting a peripheral part thereof, as claimed by claim 11

v. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, wherein a gas is discharged from a lower end opening of said one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) to be diffused while the gas is falling toward outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) in the processing space (7; All Figures, [0010]-[0011], Machine Translation); and said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) is spaced apart from a center of the shower head (volume between top and bottom of 14; Figure 1) such that a position of a main gas stream of the gas discharged from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 13. When the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

vi. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising a temperature measuring device (15; All Figures, [0010], Machine Translation) installed at the susceptor (4; All Figures, [0010]-[0011], Machine Translation) to measure a temperature thereof; and a temperature compensator ("thermoregulator"; not shown, [0010], Machine Translation) for correcting a setting temperature value of the susceptor (4; All Figures, [0010]-[0011], Machine Translation)

based on difference ("so that the measured value may become predetermined temperature"; [0010], i.e. difference reduces to *zero*) between a detection value of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) and a target temperature ("predetermined value"; [0010], Machine Translation) value of the substrate (1; All Figures), as claimed by claim 15. Applicant's claim requirement of "by performing dummy process by way of using a dummy substrate for correcting temperature" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

vii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 15, wherein the temperature measuring device (15; All Figures, [0010], Machine Translation) is a thermocouple ("thermocouple"; [0010], Machine Translation), as claimed by claim 16

viii. The structure of claim 1, wherein the processing gas is provided into the processing space (7; All Figures, [0010]-[0011], Machine Translation) through each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 34

ix. The device of claim 10, wherein the processing gas is provided into the processing space (7; All Figures, [0010]-[0011], Machine Translation) through each of said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 35

Watanabe does not teach at least one light introducing rod of a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) inserted through at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) – claim 1

Watanabe further does not teach:

i. The structure of claim 1, wherein the shower head (volume between top and bottom of 14; Figure 1) includes a gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation) where the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) are provided and one of said at least one light introducing rod is inserted through a gas injection hole (volume inside 6; Figure 1) located at a substantially central part of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 2

ii. The structure of claim 1, wherein the shower head (volume between top and bottom of 14; Figure 1) includes a gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation) where the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) are provided and said at least one light introducing rod is inserted through a number of gas injection holes (14; All Figures, [0010]-[0011], Machine Translation), respectively, which are arranged along a radial direction of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation)

and at least one of which is located at a substantially central part of the gas injection surface (lowest surface of 6; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 3

iii. The structure of claim 1, wherein an opening area of a gas injection hole (volume inside 6; Figure 1) through which each of said at least one light introducing rod is inserted is larger than an opening area of a gas injection hole (volume inside 6; Figure 1) through which no light introducing rod is inserted by a cross sectional area of said at least one light introducing rod, an identical gas being injected through the gas injection hole (volume inside 6; Figure 1) and said another gas injection hole (volume inside 6; Figure 1), as claimed by claim 5

iv. The structure of claim 1, wherein, in addition to the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for providing an assist gas as the processing gas, the shower head (volume between top and bottom of 14; Figure 1) further includes plural gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) for providing a source gas and the shower head (volume between top and bottom of 14; Figure 1) is configured such that the assist gas and the source gas are prevented from being mixed with each other therein, as claimed by claim 8

v. at least one light introducing rod of a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) inserted through at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) – claim 10

vi. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, wherein an inert gas is introduced to said at least one of gas injection holes (14; All Figures, [0010]-

[0011], Machine Translation) through which said at least one light introducing rod of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) is inserted, as claimed by claim 14. Applicant's claim requirement of "wherein an inert gas is introduced" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

vii. The device (All Figures, [0010]-[0011], Machine Translation) of claim 10, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) for blocking heat rays, as claimed by claim 12

Moslehi teaches a wafer processing apparatus (Figure 22) including one light transmitting rod (604; Figure 22) inserted through Moslehi's gas injection shoerhead (602; Figure 22). Moslehi further teaches independent, unmixed, gas injection conduits (112, 114, 116; Figure 1) for injecting gases into three independent zones (118, 120, 122; Figure 1; column 7; lines 13-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus.

Motivation to add Moslehi's light transmitting rod (604; Figure 22) and independent gas paths to Watanabe's apparatus is for process monitoring and control as taught by Moslehi (column 23; lines 39-49), and for processing spatial control (column 18; lines 61-67).

1. Claims 17, 18, 19, 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Tanaka, Sumi et al. (US 20040020599 A1). Watanabe teaches a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) processing device (All Figures, [0010]-[0011], Machine Translation) for processing a semiconductor (1; All Figures, [0010]-[0011], Machine Translation) while providing a processing gas into a processing space (7; All Figures, [0010]-[0011], Machine Translation) accommodating a heated (3-1, 3-2; All Figures, [0010], Machine Translation; Abstract) substrate (1; All Figures, [0010]-[0011], Machine Translation) to be processed, comprising: a processing chamber (7; All Figures, [0010]-[0011], Machine Translation) forming the processing space (7; All Figures, [0010]-[0011], Machine Translation) and capable of being pumped in vacuum; a susceptor (4; All Figures, [0010]-[0011], Machine Translation) for mounting the substrate (1; All Figures) in the processing chamber (7; All Figures, [0010]-[0011], Machine Translation); a heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) including a heating lamp ("lamp"; [0002], Machine Translation), installed below the susceptor (4; All Figures, [0010]-[0011], Machine Translation), for heating the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation); a support member (2,12; [0010]; Machine

Translation) having a ring shape for supporting the susceptor (4; All Figures, [0010]-[0011], Machine Translation) by contacting a peripheral part thereof; a shower head (volume between top and bottom of 14; Figure 1), installed at a ceiling (top of 7; Figure 1) of the processing chamber (7; All Figures, [0010]-[0011], Machine Translation), for supplying the processing gas; and a temperature controller (not shown; [0014]; Machine Translation) for controlling the heater (3-1, 3-2; All Figures, [0010]-[0011], Machine Translation) based on a detected value of the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) – claim 17

Watanabe further teaches:

i. The device (All Figures, [0010]-[0011], Machine Translation) of claim 17, wherein the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) is installed at the shower head (volume between top and bottom of 14; Figure 1) and faces toward a hole (volume inside 6; Figure 1) for discharging a gas, and wherein the gas is discharged from a lower end opening of the hole (volume inside 6; Figure 1) to be diffused while the gas is falling toward outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation); and the hole (volume inside 6; Figure 1) is spaced apart from a center of the shower head (volume between top and bottom of 14; Figure 1) such that a position of a main gas stream of the gas discharged therefrom falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 20. When the structure recited in the reference is

substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Watanabe does not teach:

i. wherein the support member (2,12; [0010]; Machine Translation) is colored for blocking heat rays emitted from the heating lamp ("lamp"; [0002], Machine Translation) – claim 17

ii. a radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) attached to an upper part of the shower head (volume between top and bottom of 14; Figure 1) – claim 17

iii. an isolation ring, installed at an upper side on the peripheral part of the susceptor, for blocking heat rays – claim 17

iv. The device (All Figures, [0010]-[0011], Machine Translation) of claim 17, wherein the support member (2,12; [0010]; Machine Translation) and the isolation ring are substantially made of a material selected from the group consisting of black ceramics of quartz containing black metal oxide including niobium oxide, quartz containing black SiC, quartz containing carbon or black AlN containing carbon, as claimed by claim 19

v. The device (All Figures, [0010]-[0011], Machine Translation) of claim 21, further comprising an isolation ring, installed on an upper side of a peripheral part of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), for blocking heat rays, as claimed by claim 26

Tanaka teaches a wafer processing apparatus (Figure 6) for wafer processing including an white colored aluminum nitride isolation ring (402; Figure 2; [0020]), installed at an upper side on the peripheral part of the susceptor (403; Figure 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe to add Tanaka's isolation ring.

Motivation for Watanabe to add Tanaka's isolation ring is to secure Watanabe's wafer as taught by Tanaka ([0020]).

2. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A). Watanabe is discussed above. Watanabe does not teach the device (All Figures, [0010]-[0011], Machine Translation) of claim 21, wherein a distance between a lower surface of the shower head (volume between top and bottom of 14; Figure 1) and an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation) is in a range from 20 mm to 30 mm, and a flow rate of the gas introduced through the heat ray introducing passage (volume inside 6; Figure 1) is in a range from 3 sccm to 100 sccm, as claimed by claim 24. Applicant's claim requirement of "a flow rate of the inert gas is in a range from 3 sccm to 100 sccm" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the

intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe to optimize the dimension(s) and/or relative position of Watanabe's apparatus.

Motivation for Watanabe to optimize the dimension(s) and/or relative position of Watanabe's apparatus is for optimizing processing and/or accomodating wafers of varying size and shapes. It is well established that changes in apparatus dimensions are within the level of ordinary skill in the art.(Gardner v. TEC Systems, Inc. , 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied , 469 U.S. 830, 225 USPQ 232 (1984); In re Rose , 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04). It is well established that the rearrangement of parts is considered obvious to those of ordinary skill (In re Japikse , 181 F.2d 1019, 86 USPQ 70 (CCPA 1950); In re Kuhle , 526 F.2d 553, 188 USPQ 7 (CCPA 1975); Ex parte Chicago Rawhide Manufacturing Co. , 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984).; MPEP 2144.04).

3. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al (JP 06204143 A) in view of Moslehi; Mehrdad M. (US 5846883 A) and Kawada; Hiroki et al. (US 5536359 A). Watanabe and Moslehi are discussed above. Watanabe and Moslehi do not teach:

i. The structure of claim 1, further comprising an elevator for moving the light introducing rod up and down, wherein the elevator selectively retreats the light introducing rod from said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which the light introducing rod is inserted, as claimed by claim 6

ii. The structure of claim 6, further comprising a separation mechanism for selectively closing said at least one of the gas injection holes (14; All Figures, [0010]-[0011], Machine Translation) through which the light introducing rod is inserted, as claimed by claim 7

Kawada teaches a retractable radiation transmission rod (19; Figures 3(a,b); column 6; lines 13-24) including a separation mechanism (23; Figures 3(a,b); column 7; lines 45-56) for selectively closing the radiation transmission rod's conduit (22; Figures 3(a,b); column 7; lines 45-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for Watanabe and Moslehi to add Kawada's radiation transmission rod control means.

Motivation for Watanabe and Moslehi to add Kawada's radiation transmission rod control means is for protecting the apparatus from corrosive environments as taught by Kawada (column 7; lines 45-56).

Response to Arguments

4. Applicant's arguments with respect to claims 15, 21-27, 34, and 35 have been considered but are moot in view of the new grounds of rejection.

5. Applicant states:

"

Watanabe does not teach nor suggest at least the limitation of a shower head structure for use in a device for processing a semiconductor while a processing gas being provided into a processing space accommodating a heated substrate to be processed, comprising: a shower head including a plurality of gas injection holes for providing the processing gas; and at least one light introducing rod of a radiation thermometer inserted through at least one of the gas injection holes. Watanabe

describes a shower head and radiation thermometer. Watanabe does not teach or suggest a light introducing rod of a radiation thermometer, and the outstanding Office Action has acknowledged this fact.

“

and..

“

Although Moslehi describes an optical plug (604) in Fig. 22, this is not a light introducing rod of a radiation thermometer inserted through at least one of the gas injection holes.

“

6. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

7. Applicant states:

“

Dependent Claims 9 and 14 recite that an inert gas is introduced to said at least one of gas injection holes through which said at least one light introducing rod of the radiation thermometer is inserted. The above-noted feature is supported at page 24, line 25-page 25, line 2 of the specification.

“

In response, the Examiner noted in the prior action that such claim lanaguge is believed to be an intended use recitation in the pending apparatus claims. Applicant’s claim requirement of “an

inert gas" is a claim requirement of intended use in the pending apparatus claims. Further, it has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02). With respect to a remainder of Applicant's claim "where the light introducing rod of a radiation thermometer is inserted", the Examiner directs Applicant to the above stated new grounds of rejection.

With respect to claim 12, 17, 19, and 26, Applicant states:

"

Although Tanaka describes a wafer processing apparatus for wafer processing including a white colored aluminum nitride isolation ring, installed at an upper side on the peripheral part of the susceptor, Tanaka and the invention recited in the above-noted claims are structurally and functionally different from each other for at least the following reasons. (1) since the clamp ring (402) of Tanaka is made of white-colored A1N(aluminum nitride)- based ceramics with a high thermal radiation transmissivity (see [0020]), it is unrelated to blocking heat rays emitted from the heater as claimed in Claims 12, 17 and 26.

"

In response, the Examiner notes that "white" is also a color. The description of Tanaka reads on the claims. Further, although a white colored aluminum nitride isolation ring may be less

efficient at reflecting thermal radiation (according to [0020]), as per thermodynamic principles, there is no perfect radiator and no perfect absorber. In other words, even a white colored aluminum nitride isolation ring can reflect some thermal radiation.

Applicant states with respect to claim 20:

"

Claim 20 recites that the radiation thermometer is installed at the shower head and faces toward a hole for discharging a gas; the gas is discharged from a lower end opening of the hole to be diffused while the gas is falling toward outside of the susceptor; and the hole is spaced apart from a center of the shower head such that a position of a main gas stream of the gas discharged therefrom falls outside an outer circumference of the substrate on the susceptor when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor. The feature of Claim 20 relating to determining the position of the radiation thermometer is not disclosed or suggested by Watanabe and Tanaka. Therefore it is respectfully submitted that the rejection should be withdrawn.

"

In response, the Examiner has reassesed his position and finds that the device (All Figures, [0010]-[0011], Machine Translation) of claim 17, wherein the radiation thermometer (5; All Figures, [0010]-[0011], Machine Translation; "pyrometer"; abstract) is installed at the shower head (volume between top and bottom of 14; Figure 1) and faces toward a hole (volume inside 6; Figure 1) for discharging a gas, and wherein the gas is discharged from a lower end opening of the hole (volume inside 6; Figure 1) to be diffused while the gas is falling toward outside of the susceptor (4; All Figures, [0010]-[0011], Machine Translation); and the hole (volume inside 6;

Figure 1) is spaced apart from a center of the shower head (volume between top and bottom of 14; Figure 1) such that a position of a main gas stream of the gas discharged therefrom falls outside an outer circumference of the substrate (1; All Figures) on the susceptor (4; All Figures, [0010]-[0011], Machine Translation) when the gas stream reaches an identical horizontal level to that of an upper surface of the susceptor (4; All Figures, [0010]-[0011], Machine Translation), as claimed by claim 20. Gas streams claimed and used to define an apparatus are considered attributes of the *structure* conveying the gas in the Examiner's opinion. The Examiner has provided ample evidence suggesting that the prior art teaches the relevent structure. As a result when the structure recited in the reference is substantially identical to that of the claims, claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Conclusion

8. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.